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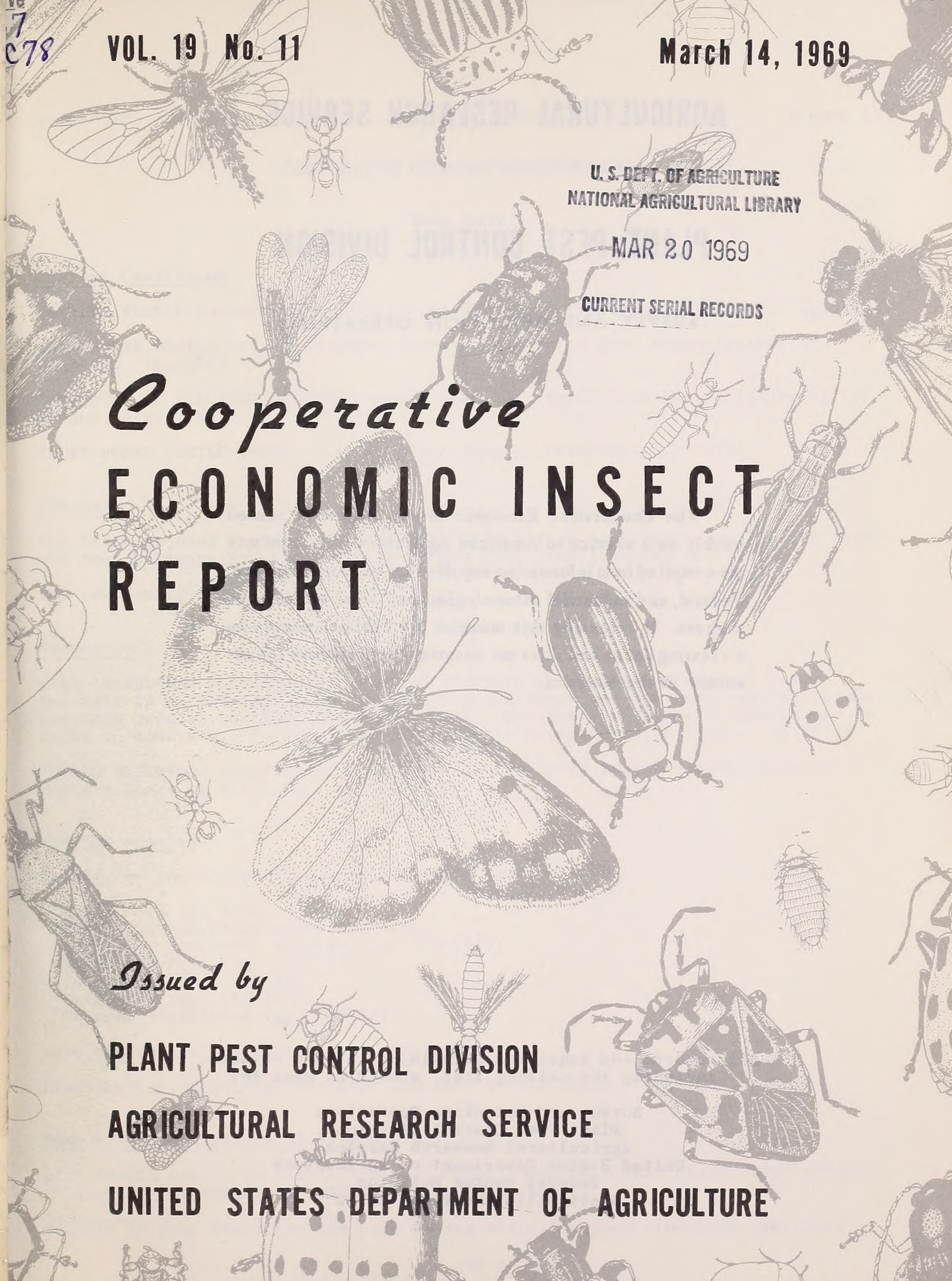

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Federal Center Building
Hyattsville, Maryland 20782

Volume 19 March 14, 1969 Number 11

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ALFALFA WEEVIL increasing in alfalfa in Oktibbeha County, Mississippi. (p. 172).

GREEN JUNE BEETLE and WHITE GRUBS causing concern in Sand Mountain area of Alabama. (p. 171).

Carryover of EUROPEAN RED MITE winter eggs high throughout Yakima Valley of Oregon. (p. 172).

SHORT-NOSED CATTLE LOUSE heavy in Mayes County, Oklahoma. (p. 174).

Detection

New State records include a TENEBRIONID BEETLE from Washington (p. 175), a PLANT BUG from Delaware (p. 173), and SUNFLOWER MOTH from Arkansas (p. 178).

For new county records see page 175.

Forecasts

BEET LEAFHOPPER populations in desert breeding areas lower than last year. Movement to cultivated districts in central Arizona and southeastern California, southern Nevada, southern and eastern Utah, and western Colorado expected to be light to moderate. Movement to northern Utah expected to be light. (p. 171).

POTATO TUBERWORM expected to be problem in untreated potato storage bins on Eastern Shore of Virginia. (p. 180).

Special Reports

Summary of Insect Conditions in the United States - 1968

- Sugarbeets (p. 177).
- Miscellaneous Field Crops (p. 178).
- Potatoes, Tomatoes, Peppers (pp. 178-181).
- Beans and Peas (pp. 181-182).
- Cole Crops (pp. 182-184).
- Cucurbits (pp. 184-185).
- General Vegetables (pp. 185-187).

European Chafer Quarantine Map. Centerfold.

Distribution of Smaller European Elm Bark Beetle (map). (p. 188).

Some First Occurrences of Season

PEAR PSYLLA adults in Washington and Oregon; EASTERN LUBBER GRASSHOPPER nymphs in Florida; SUBTERRANEAN TERMITE swarms in Delaware.

Reports in this issue are for week ending March 7 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING MARCH 3

HIGHLIGHTS: Cold stormy weather prevailed over most of the Nation. Heavy snow fell in many areas and severe thunderstorms occurred in parts of the Deep South.

PRECIPITATION: Heavy snow fell in many areas during the week. On Monday, Worcester, Massachusetts, received 5 inches while 15 inches fell at Mt. Washington, New Hampshire, accompanied by winds gusting to 62 m.p.h. Some areas in New England lay under 5-6 feet of snow. A heavy snow storm moved across the southern Rocky Mountains on Tuesday. It dumped 4 inches of snow at Cedar City, and 3 inches at Bryce Canyon, both in Utah and by Wednesday was bringing snow to the eastern slopes of the Rockies from Wyoming to the Texas Panhandle. About midweek, a Pacific storm lashed the northwest coast with gales and heavy rain, and spreading snow inland to the Rocky Mountains. At Paradise Ranger Station, Washington, the snowpack reached 255 inches, over 21 feet. Meanwhile, the wet weather continued over mid-America. Substantial rain fell from eastern Texas to Alabama with lighter rain northward to southern Missouri. Severe thunderstorms occurred in southern Louisiana with wind gusts reaching 70 m.p.h. Light snow occurred from the northern Great Plains to the Great Lakes. Thursday brought rain to the southern Appalachians with rain in the higher elevations. On Saturday, a storm produced blizzard conditions from Kansas to the Texas Panhandle with heavy thunderstorms ahead of the front. Strong winds drifted the snow badly, closing some roads in southern Kansas to northwestern Oklahoma. In the afternoon as the storm moved northeastward, it spread snow through the Ohio River Valley to the central Appalachians. Heavy downpours fell in Florida on Sunday. The deep accumulations of snow, record-breaking in some areas and near record in other, are a threat of spring floods, especially in north-central United States along the tributaries of the upper Mississippi River, the Red River of the North, and the lower Missouri River.

Weather continued on page 176.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southeastern California, and Central Arizona

Surveys were conducted for beet leafhopper (Circulifer tenellus) during the period February 3-13, 1969. If present conditions prevail, spring movement from the southern breeding grounds to cultivated districts of central Arizona and southeastern California, southern Nevada, southern and eastern Utah, and western Colorado is expected to be light to moderate; movement to northern Utah is expected to be light.

The southern breeding grounds, comprising approximately 50,000 square miles of potential weed host area, were considered to have an estimated 43.5-percent host plant cover at the time of the survey. As a result of fall and winter rains, annual host plants were found generally throughout central and southern Arizona. Elsewhere, lack of moisture restricted host plant germination and plants were sparse.

The average number of beet leafhoppers per square foot where host plants were present was 0.028 in 1969, compared with 0.034 in 1968, 0.09 in 1967, 0.013 in 1966, 0.04 in 1965, 0.15 in 1964, 0.02 in 1963, and 0.012 in 1962. It is estimated from the data collected during this survey that overwintering beet leafhoppers in the spring breeding areas totaled 14 billion in 1969 compared with 24.1 billion in 1968, 32.7 billion in 1967, 6.5 billion in 1966, 12 billion in 1965, 112 billion in 1964, 7.7 billion in 1963, and 6.1 billion in 1962.

This report covers only the beet leafhopper situation in the area surveyed. It has no reference to populations that may have overwintered in local breeding areas in northern and eastern Utah, or western Colorado, or western Nevada. (PPC West. Reg.).

CORN LEAF APHID (Rhopalosiphum maidis) - CALIFORNIA - Medium on 80 acres of barley in Ontario, San Bernardino County. (Cal. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - CALIFORNIA - Medium on 80 acres of barley in Ontario, San Bernardino County. (Cal. Coop. Rpt.). NEW MEXICO - Ranged 15-35 per linear foot in most Curry County wheat. Ranged up to 150 per linear foot in 1 field. Damage evident on lower leaves. (Mathews). OKLAHOMA - Ranged 50-150 per linear foot on wheat in Jackson and Tillman Counties, and scattered fields in Chattanooga area of Comanche County, Duncan area of Stephens County, and Tuttle area of Grady County. Ranged 1-20 per linear foot in Cotton, Kiowa, Noble, Payne, and Washita Counties. (Okla. Coop. Sur.). ARKANSAS - Ranged 20-25 per 100 sweeps in northwest area. (Boyer).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Ranged 15-20 per 100 sweeps in northwest area. (Boyer). CALIFORNIA - Medium on 80 acres of barley in Ontario, San Bernardino County. (Cal. Coop. Rpt.).

TURF, PASTURES, RANGELAND

GREEN JUNE BEETLE (Cotinis nitida) - ALABAMA - This species and Phyllophaga spp. (white grubs) ranged 20-25 grubs per square foot in 50+ percent of fescue fields in Cullman County. Grubs much heavier in areas spread with broiler manure and litter. Occurrences light to heavy in Sand Mountain area. (Baswell et al.).

EASTERN LUBBER GRASSHOPPER (Romalea microptera) - FLORIDA - First instar nymphs found in Sebring, Highlands County. First report of season. (Shelton).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Larval infestations increasing, about 25-30 per square foot in Oktibbeha County alfalfa. (Dinkins, Feb. 21).

PEA APHID (Acyrthosiphon pisum) - MISSISSIPPI - Moderate in Oktibbeha County alfalfa. Adults and nymphs about 25-30 per foot. (Dinkins, Feb. 21). ARKANSAS - Very low in vetch in northwest area. (Boyer).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - MISSISSIPPI - Adults very light in Oktibbeha County alfalfa. (Dinkins, Feb. 21).

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Larvae of this species and Plutella xylostella (diamondback moth) infested 50 untreated cabbage plants nearing maturity at Belle Glade, Palm Beach County. Collected and determined by W.G. Genung. (Fla. Coop. Sur., Feb. 26).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - WASHINGTON - Overwintering mortality of full-grown larvae 60 percent in sample on pear in Yakima, Yakima County. (Johnson).

EUROPEAN RED MITE (Panonychus ulmi) - WASHINGTON - Carryover of winter eggs high throughout Yakima Valley. Viability unaffected by subfreezing temperatures except where extreme lows occurred. (Johnson).

GREEN PEACH APHID (Myzus persicae) - WASHINGTON - Eggs hatching on peach twigs February 19 in Yakima County. First stem mother nymphs noted same date. (Johnson).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - High percentage of adults survived severe freezing in December and January. Overwintering adults active in Yakima Valley. Mating observed March 3, but no oviposition noted at Parker Heights, Yakima County. (Johnson). OREGON - First spraying completed in Jackson County. Oviposition February 25, no hatching to date. (Berry). In Hood River County up to 15 percent of females with mature eggs; no oviposition noted. (Zwick).

CITRUS

AN ARMORED SCALE (Unaspis citri) - FLORIDA - All stages severe on numerous young citrus trees at 2 nurseries in Orange County February 18-27. (Musgrove, Ware).

SMALL FRUITS

GRAPE MEALYBUG (Pseudococcus maritimus) - WASHINGTON - First-stage nymphs and eggs found in egg sacs under rough bark of Concord grapes. No movement of nymphs from egg sacs at Prosser, Benton County. (Cone).

ORNAMENTALS

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Adults on castorbean (Ricinus communis) at Orlando, Orange County, January 24. Collected by A.C. Crews. This is a new Florida Department of Plant Industry host record. (Fla. Coop. Sur.).

TEA SCALE (Fiorinia theae) - ALABAMA - Heavy, 100+ per leaf, on camelia plants in Barbour County. Crawlers present on leaves; some defoliation. (Hagler).

FOREST AND SHADE TREES

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - IOWA - Adults emerged March 2 in a house in Orange City, Sioux County. (Iowa Ins. Sur.).

SPRUCE APHID (Elatobium abietinum) - OREGON - Appearing in Portland, Multnomah County. (Nicolaison).

BLACK VINE WEEVIL (Brachyrhinus sulcatus) - WASHINGTON - Larvae very heavy on roots of 10,000 container-grown blue spruce at nursery in Olympia, Thurston County. Pupation began March 3. (Saunders).

A PLANT BUG (Plagiognathus delicatus) - DELAWARE - Collected on honeylocust in northern New Castle County June 8, 1968, by D.F. Bray. Determined by P.P. Burbutis. This is a new State record. (Burbutis).

AN ARMORED SCALE (Clavaspis coursetiae) - FLORIDA - Infesting buttonwood (Conocarpus erectus) at Ft. Pierce, St. Lucie County, August 23, 1968. Collected by E.W. Campbell. This is a new Florida Department of Plant Industry host and county record. (Fla. Coop. Sur.).

WALNUT SCALE (Aspidiotus juglansregiae) - FLORIDA - Collected on honeylocust January 23, 1969, and silver maple April 24, 1968. Both collections made at same nursery in Gainesville, Alachua County. Collected by A.E. Graham. These are new Florida Department of Plant Industry host records. (Fla. Coop. Sur.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Five cases reported in U.S. March 2-8 as follows: TEXAS - Hidalgo 1, Live Oak 1, Maverick 2, Starr 1. Total of 96 cases reported in portion of Barrier Zone in Republic of Mexico February 23 to March 1 as follows: Territorio sur de Baja California 3, Sonora 46, Coahuila 5, Nuevo Leon 7, Tamaulipas 35. Total of 17 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 45,768,000; Mexico 106,580,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - COLORADO - Grubs in cattle in the Nunn area, Weld County. Averaged 9 per head in untreated and 2 per head in treated animals. (Hantsbarger).

FACE FLY (Musca autumnalis) - MISSOURI - Emerged from winter hibernation in house at Lamar, Barton County, February 27. Collected by C.G. Jones. Determined by W.S. Craig. This is a new county record. (Munson). OREGON - Active adult female found in Salem, Marion County. (Goeden).

MOSQUITOES - MISSISSIPPI - *Culiseta inornata*, *Culex salinarius*, *Culex restuans*, *Anopheles quadrimaculatus*, *Anopheles crucians*, *Aedes vexans* adults collected in Hancock County. *Culiseta inornata* and *Culex salinarius* dominant. Larvae of *Culex restuans* most abundant of larvae found. (Dinkins).

CATTLE LICE - OKLAHOMA - Mostly *Haematopinus eurysternus* (short-nosed cattle louse) heavy on cattle in Mayes County, moderate in Ellis County, and light in Washington County. (Okla. Coop. Sur.). MISSISSIPPI - *Linognathus vituli* (long-nosed cattle louse) very heavy on 60 beef cattle, calves appear more heavily infested in Oktibbeha County. (Dinkins, Feb. 21).

CHICKEN BODY LOUSE (*Menacanthus stramineus*) - ARKANSAS - Heavy and widespread in northwest area. (Simco).

EAR TICK (*Otobius megnini*) - OKLAHOMA - Found 4 ticks on 2 of 15 steers in Washington County. (Okla. Coop. Sur.).

NORTHERN FOWL MITE (*Ornithonyssus sylviarum*) - COLORADO - Economic on poultry farm in Adams County; causing hens to molt. Controls necessary. (Hantsbarger).

HOUSEHOLDS AND STRUCTURES

A POWDER-POST BEETLE (*Lyctus* sp.) - OREGON - Severe in understructure of house near Ashland, Jackson County. Prevalent in timbers with dry rot fungus. (Larson, Berry).

SUBTERRANEAN TERMITES (*Reticulitermes* spp.) - DELAWARE - First swarm of season reported in Sussex County. (Milford, Feb. 17). MICHIGAN - *R. flavipes* (eastern subterranean termite) swarming in Allegan County. (Janes).

BENEFICIAL INSECTS

A CRYPTOCHETID FLY (*Cryptochetum iceryae*) - CALIFORNIA - Larvae and pupae parasitizing *Icerya purchasi* (cottony-cushion scale) in Yuba City, Sutter County. (Cal. Coop. Rpt.).

LADY BEETLES - NEW MEXICO - Mostly *Hippodamia convergens* (convergent lady beetle) up to 3 per linear foot in small grain fields in Curry County. (Mathews).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - TENNESSEE - Surveys negative in Hamilton, Lincoln, and Wayne Counties. (Harris, Watson).

WHITE GARDEN SNAIL (*Theba pisana*) - CALIFORNIA - Light on 3 properties in Manhattan Beach eradication area. These infestations extend buffer block treatment by 4 city blocks. (Cal. Coop. Rpt.).

INSECT DETECTION

New State Records

A TENEBRIONID BEETLE (*Tribolium brevicornis*) - WASHINGTON - Found in alfalfa leafcutter bee nest material at Zillah, Yakima County. Nest material received from out of State. Determined by H.H. Hatch. (Eves).

SUNFLOWER MOTH (*Homoeosoma electellum*) - ARKANSAS - Larvae were collected on sunflower in Jackson County, by W.P. Boyer on July 29, 1968. Determination was made by D.M. Weisman. Reared adults were determined by W.D. Duckworth. (p. 178).

A PLANT BUG (*Plagiognathus delicatus*) - DELAWARE - Collected on honeylocust in northern New Castle County June 8, 1968, by D.F. Bray. Determined by P.P. Burbutis. (p. 173).

New County Records

AN ARMORED SCALE (*Clavaspis coursetiae*) - FLORIDA - St. Lucie County. (p. 173).

FACE FLY (*Musca autumnalis*) - MISSOURI - Barton County. (p. 173).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 2/28-3/6, BL - Black cutworm (*Agrotis ipsilon*) 1, granulate cutworm (*Feltia subterranea*) 9, variegated cutworm (*Peridroma saucia*) 1. TEXAS - Brownsville - 2/18-3/6, 2BL - Armyworm (*Pseudaletia unipuncta*) 29, black cutworm 43, cabbage looper (*Trichoplusia ni*) 3, corn earworm (*Heliothis zea*) 44, granulate cutworm 11, pale-sided cutworm (*Agrotis malefida*) 62, tobacco budworm (*Heliothis virescens*) 2, tobacco hornworm (*Manduca sexta*) 1, variegated cutworm 16, yellow-striped armyworm (*Prodenia ornithogalli*) 3.

CUTWORMS - OHIO - Blacklight trap operated throughout winter at Wooster, Wayne County, to determine earliest moth flights. Following moths collected February 2, 1969: *Eupsilia morrisoni* 2, *E. sidus* 1, and *Plathypena scabra* (green cloverworm) 1. February 1, 1967, previous earliest date for these species in Wayne County. (Rings).

CORRECTIONS

CEIR 19(10):160 - RAPID PLANT BUG (Adelphorcoris rapidus) should read (Adelphocoris rapidus)

CEIR 19(8):122 - TOMATO HORNWORM (Manduca quinquemaculata) should read *TOBACCO HORNWORM* (*Manduca sexta*) for Oregon. (Westcott). TOMATO HORNWORM (*M. quinquemaculata*) correct for Kansas.

HAWAII INSECT REPORT

Turf, Pasture, Rangeland - Larvae of a GRASS WEBWORM (*Herpetogramma licarsisalis*) caused 75 percent damage in 5 acres of Bermuda grass and heavy sporadic damage in 5 acres of Kikuyu grass at Haiku, Maui; larvae and adults trace to light in other areas. Damage negligible throughout Hilo and Kona, Hawaii; medium to heavy on various grasses in Puna. Larvae and adults trace on Oahu and Kauai. (Miyahira, Sugawa, Yoshioka, et al.).

Fruits and Nuts - COCONUT SCALE (*Aspidiotus destructor*) becoming widespread on coconut trees in Koko Head, Oahu. Light on leaves of many previously uninfested trees. (Nakao). A BARK BEETLE (*Xylosandrus compactus*) medium on avocado trees at Koa Ridge Farm, Kipapa, Oahu. (Suzukawa, Davis). FLORIDA RED SCALE (*Chrysomphalus aonidum*) heavy on many coconut leaves in Lihue, Wailua, Poipu, and Anahola, Kauai. Medium to heavy on coconut leaves in various areas in Honolulu, Oahu. (Sugawa, Funasaki).

Ornamentals - Nymphs and adults of A PLATASPID BUG (*Coptosoma xanthogramma*) heavy on flowers of jade vine along library building in Lihue and on maunaloa vine in Ahukini, Kapahi, Koloa, and Anahola, Kauai. Eggs and adults light on flowers of young coralbeans (*Erythrina* spp.) at Koa Ridge Farm at Kipapa and light to medium on maunaloa vine along windward coast on Oahu. (Sugawa, Suzukawa, Davis, et al.). HAWAIIAN THRIPS (*Taeniothrips hawaiiensis*) medium to heavy on maunaloa flowers on Kauai, Oahu, and probably other islands. Buildup on gardenia blossoms anticipated within several weeks as most gardenias in bud stage and expected to bloom from late March. CROTON CATERPILLAR (*Achaea janata*) heavy on castorbean plants at Koko Head and heavily damaged croton hedge at Kailua, Oahu. Further increase and spread expected. (Funasaki, Olson).

Man and Animals - HORN FLY (*Haematobia irritans*) adults moderate to heavy on cattle in open pasture, light on cattle in feeding pen at Ulupalakua, Maui. (Miyahira).

Beneficial Insects - A PTEROMALID WASP (*Muscidifurax raptor*) recovered for the first time on island of Hawaii at Kawaihae and Keaau. Released on Hawaii for control of the house fly (*Musca domestica*) and other filth inhabiting flies. (Yoshioka).

Miscellaneous Insects - Adults of a GRASSHOPPER (*Oedaleus abruptus*) spreading from known infested grassy areas at Hickam Air Force Base, Honolulu, Oahu; moving toward barracks and housing area. (Olson). Heavy winds on north shore of Oahu during past two weeks may generate severe outbreak of COCONUT LEAF ROLLER (*Hedylepta blackburni*). Last explosive outbreak in 1959 preceded by heavy winds.

Weather continued from page 170.

TEMPERATURE: Temperatures averaged below normal over almost the entire Nation. The cold weather has been remarkable because of its intensity and persistence. Montana has shivered through eleven weeks of cold weather and the Deep South has been cold for the past 3-4 weeks. Temperatures in the past week averaged 9° to 18° below normal over most of Montana and southward across the western Great Plains to the gulf. Most of the Rocky Mountains averaged more than 9° below normal. On Sunday, subzero temperatures occurred in 16 States. (Summary supplied by Environmental Data Service, ESSA.)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1968

(Continued from page 168)

SUGARBEETS

Highlights:

ZEBRA CATERPILLAR, BEET ARMYWORM, and BEET WEBWORM were major pests of sugarbeets in the Arkansas Valley of Colorado. Beet armyworm was heavy in southern Arizona. SUGAR-BEET ROOT MAGGOT was damaging in Cass County, North Dakota, for the first time.

Lepidoptera were of concern on sugarbeets in 1968. VARIEGATED CUTWORM (Peridroma saucia) was spotted and heavy in the panhandle area of NEBRASKA in late August and September; few controls were necessary. ZEBRA CATERPILLAR (Ceramica picta), BEET ARMYWORM (Spodoptera exigua), and BEET WEBWORM (Loxostege sticticalis) were the major pests in the Arkansas Valley of COLORADO. Losses in the eastern area were light. Beet webworm injury in UTAH was very low due to unusually low numbers of adults. Beet armyworm larvae in ARIZONA ranged light to moderate in 5 southern counties in March and April. From May through mid-June numbers were heavy in Cochise and Graham Counties. Many acres were plowed under in Cochise County. During October and November populations ranged moderate to heavy in Maricopa and Pinal Counties. Very few growers treated. In CALIFORNIA variegated cutworm was heavy on beets in Imperial County and SALT-MARSH CATERPILLAR (Estigmene acrea) damaged beets in Yolo and Santa Cruz Counties.

Several beetles were troublesome on sugarbeets in 1968. High numbers of SPOTTED BLISTER BEETLE (Epicauta maculata) infested fields in Goshen County, WYOMING, in late July. About 500 acres were treated. Larvae of unspecified FLEA BEETLES damaged sugarbeets in MONTANA from Custer in Yellowstone County to Park City in Stillwater County and south to Bridger in Carbon County. Adults were a problem in the Hardin area of Big Horn County. Systena taeniata was one of 2 major pests of this crop in northeastern COLORADO. Losses in the eastern areas were light. BEET LEAF BEETLE (Erynephala puncticollis) in NEBRASKA moved into sugarbeet fields bordering alkali-grass pastures on June 11 in Scotts Bluff County. Counts ranged 4-5 per row foot; egg masses were present on 30 percent of the plants. Controls were applied.

GREEN PEACH APHID (Myzus persicae) was the predominant pest of sugarbeets in CALIFORNIA. Populations in ARIZONA were heavy on the crowns of plants from January through early February in Maricopa County and moderate in November and December. New growth was damaged in Cochise County in June. Control of this aphid was difficult in Curry County, NEW MEXICO, during August and September. Green peach aphid populations were normal on sugarbeets in UTAH.

SPINACH LEAF MINER (Pegomya hyoscyami) damage was as common as usual in UTAH. In MONTANA this leaf miner infested sugarbeets in the Toston and Townsend area of Broadwater County and near Hardin, Big Horn County. Spinach leaf miner was one of 2 major pests in northeastern COLORADO. Losses in the eastern area were light. In MICHIGAN, damage ranged moderate to heavy in some Bay County and Saginaw Valley fields.

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) losses in north-central COLORADO were very variable from field to field. In IDAHO, adult populations peaked at Rupert, Minidoka County, and at Burley, Cassia County, by May 20. Larvae caused little damage in MONTANA. Adults of sugar-beet root maggot emerged in NORTH DAKOTA the week of June 3, about 2 weeks earlier than in 1967. Peak fly populations occurred the week of June 24 in Walsh and Pembina Counties. Larval damage was severe to untreated sugarbeets in these counties. Usually a problem only in these 2 counties, the first known economic infestation in Cass County caused light damage.

MISCELLANEOUS FIELD CROPS

SUNFLOWER MOTH (*Homoeosoma electellum*) larvae in CALIFORNIA damaged safflower in Imperial County. Sunflower moth larvae were medium to heavy on sunflower in the McLennan County area of TEXAS in late June and medium in Brazos and Hill Counties. Sunflower moth larvae were collected on sunflower in Jackson County, ARKANSAS, by W.P. Boyer on July 29, 1968. The determination was made by D.M. Weisman. Reared adults were determined by W.D. Duckworth. This is a new State record. Larvae were reported as a major pest of sunflower in 1968. Infestations were heavier in July than later in the year. Sunflower moth and BANDED SUNFLOWER MOTH (*Phalonia hospes*) adults were active in sunflower fields in southern NORTH DAKOTA the week of July 8. By the last week of July larvae were evident. Up to 200 (average 50) larvae per 100 heads infested 73 percent of the heads in the east-central and northeastern districts. Banded sunflower moth comprised about 84 percent of the population. Damage was economic in several fields.

CUTWORMS reduced up to 20 percent of the stand in individual sunflower fields in late May in MINNESOTA. BLACK CUTWORM (*Agrotis ipsilon*) damaged flax in Codington County, SOUTH DAKOTA, in mid-June. Up to 12 larvae per row foot infested heavily damaged fields. Light numbers of BEET ARMYWORM (*Spodoptera exigua*) damaged castorbeans in Hale County, TEXAS, in July.

SUNFLOWER BEETLE (*Zygogramma exclamationis*) was light on sunflower in Polk County, MINNESOTA, in late July. Larvae ranged up to 120 per 100 infested sunflower plants in Pembina and Grand Forks Counties, NORTH DAKOTA, but no damage was evident. SUNFLOWER MAGGOT (*Strauzia longipennis*) pupae were evident in 70 percent of the sunflower fields in 5 east-central counties of North Dakota. Counts ranged up to 80 (average 26) per 100 heads.

LYGUS BUGS (*Lygus* spp.) were moderate on safflowers in late March and early May in Maricopa County, ARIZONA. These pests also damaged safflower in CALIFORNIA.

POTATOES, TOMATOES, PEPPERS

Highlights:

COLORADO POTATO BEETLE continued to increase in Pennsylvania. This pest was moderate to heavy on the Eastern Shore of Maryland and was more severe than in 1967 in Virginia. Colorado potato beetle was controlled in Alabama, but populations in Idaho were the heaviest in several years. FLEA BEETLES required controls in Arizona, and TOBACCO FLEA BEETLE was more damaging than usual in California. TOMATO FRUITWORM was the most important pest of commercial tomatoes in Alabama. EUROPEAN CORN BORER was the major pest of peppers in Michigan and Maryland and was damaging in Virginia and Delaware. GREEN PEACH APHID was heavy on potatoes on the Eastern Shores of Maryland and Virginia.

COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) laid eggs by the last week of May in southern NEW HAMPSHIRE. The population of this pest was greater in 1968 than in 1967. This leaf beetle was of no commercial importance in well-sprayed fields in RHODE ISLAND. Populations in PENNSYLVANIA continued to increase on potatoes and tomatoes. After an absence of 20 years it has resumed economic importance throughout the eastern half of the State. Colorado potato beetle increased generally on commercial potatoes and tomatoes in DELAWARE. Moderate to heavy numbers in MARYLAND required controls on tomatoes and late potatoes in 3 southern Eastern Shore counties. Large plantings of eggplants were heavily damaged in Anne Arundel County. Damage by Colorado potato beetle was more severe than in 1967 in VIRGINIA. Control failed in some cases. The normal summer inactivity period did not occur. Feeding continued until mid-October. Untreated check plots were completely defoliated.

THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED

1. Soil, compost, decomposed manure, humus, muck, and peat, separately or with other things.

    Soil samples shipped to Corps of Engineers Soil Laboratories are exempt.

    Soil samples of one pound or less shipped to designated laboratories * are exempt.

    Compost, decomposed manure, humus, and peat are exempt ** if dehydrated, ground, pulverized, or compressed.

2. Plants with roots, except soil-free aquatic plants, moss, and Lycopodium (clubmoss or ground-pine or running pine).

3. Grass sod.

4. Plant crowns and roots for propagation.

5. True bulbs, corms, rhizomes, and tubers of ornamental plants when freshly harvested or uncured.

EUROPEAN CHAFER

COOPERATIVE FEDERAL, STATE, AND CANADIAN QUARANTINES

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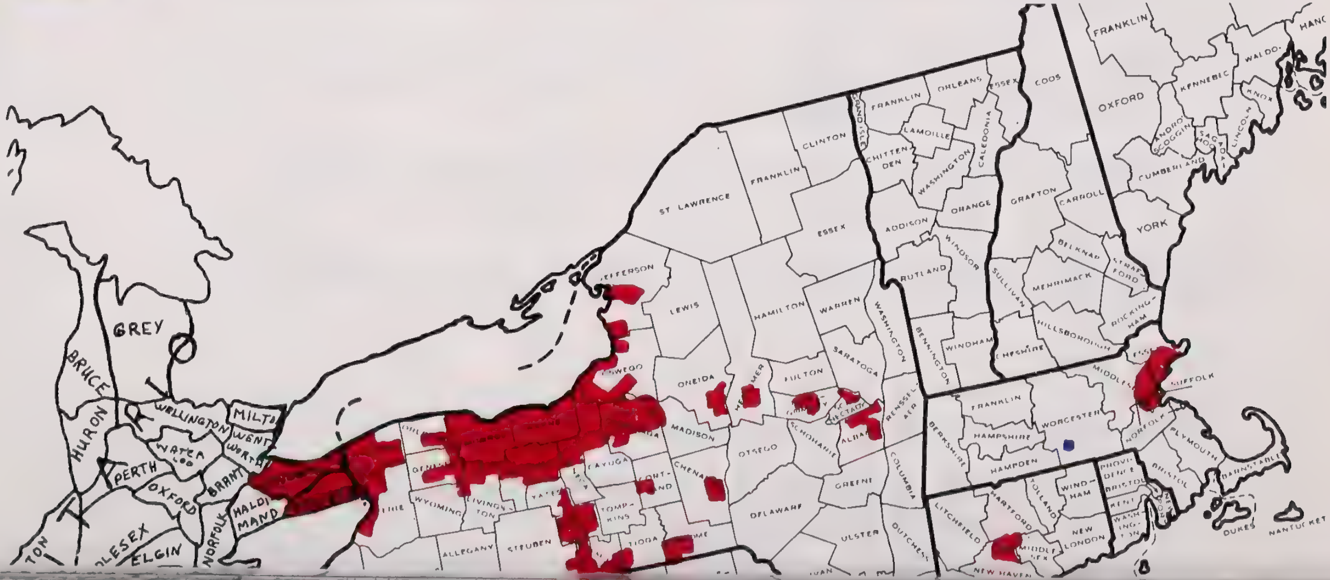

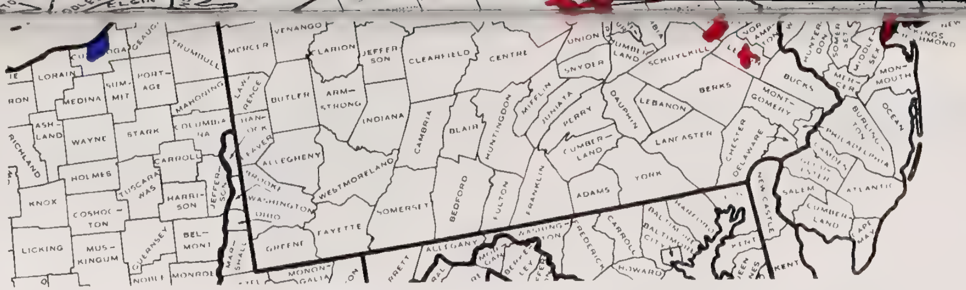

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2. BLUE INTO ANY OTHER AREA WHEN REQUIRED BY APPROPRIATE STATE QUARANTINE OR BY AN AUTHORIZED INSPECTOR.

IN THE UNITED STATES, CONSULT YOUR STATE OR FEDERAL PLANT PEST CONTROL INSPECTOR OR YOUR COUNTY AGENT AND, IN CANADA, YOUR NEAREST PLANT PROTECTION DIVISION OFFICE FOR ASSISTANCE REGARDING AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION AND
CANADIAN DEPARTMENT OF AGRICULTURE
COOPERATING WITH AFFECTED STATES

Revised Jan. 10, 1969

SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

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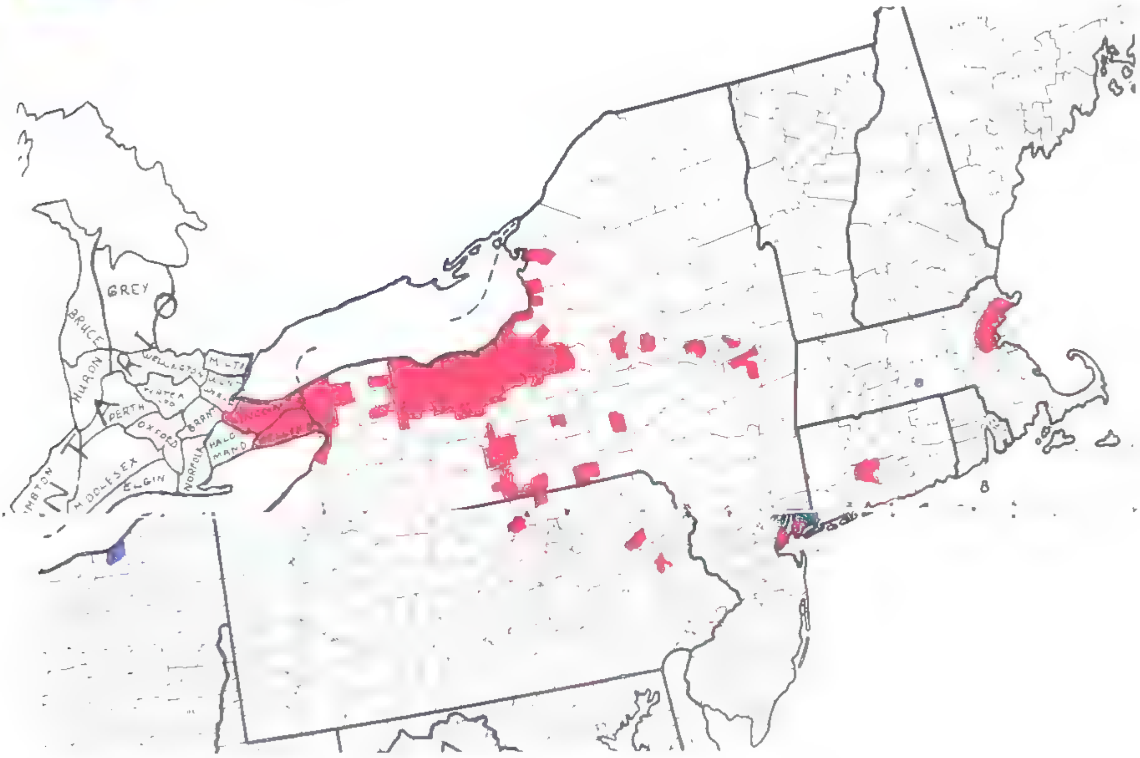

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3. Grass sod.

4. Plant crowns and roots for propagation.

5. True bulbs, corms, rhizomes, and tubers of ornamental plants when freshly harvested or uncured.

   True bulbs, corms, rhizomes, and tubers (other than clumps of dahlia tubers) of ornamental plants are exempt ** if free of soil.

6. Used mechanized soil-moving equipment.

   Used mechanized soil-moving equipment is exempt ** if cleaned and repainted.

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* Information as to designated laboratories may be obtained from an inspector

** Exempt if not exposed to infestation after cleaning or other prescribed handling.

GPO 961-681

6. Used mechanized soil-moving equipment.

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GPO 961-681

Colorado potato beetle larvae were severe on 160 of 200 potato plants at Thonotosassa in Hillsborough County, FLORIDA, in late April. Although this beetle poses a threat each year in ALABAMA, it was again successfully controlled in commercial potato areas by the constant use of pesticides. Colorado potato beetle damaged vegetable crops in many sections of TEXAS. Damage in OKLAHOMA was heaviest during May. This pest caused light damage to gardens in many eastern areas of KANSAS. In MINNESOTA this leaf beetle severely damaged a field near Argyle, Marshall County, in July; damaging numbers are rarely found in the State. Trace numbers infested other potato fields in this area.

Colorado potato beetle infestations occurred in fewer areas than usual in MONTANA, but controls were necessary in Lake and Carbon Counties. Larvae heavily damaged garden potatoes in Park and Goshen Counties, WYOMING, in late June and early July. Light numbers caused light to moderate losses in most of COLORADO. Colorado potato beetle was above normal on potatoes in northern UTAH. Populations of this leaf beetle in many areas of IDAHO were the largest in several years. By June 20 either adults or larvae infested up to 75 percent of the potato plants in Power County. Larvae were abundant and caused extensive damage to untreated potato fields. In OREGON Colorado potato beetle was scarce and no damage was reported to central and eastern area potatoes.

FLEA BEETLES (*Systena* spp.) in early May and DESERT CORN FLEA BEETLE (*Chaetocnema ectypa*) in late April required controls on bell peppers in Yuma County, ARIZONA. TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) was more general and damaging than usual in CALIFORNIA. TUBER FLEA BEETLE (*E. tuberis*) remained at low levels in central OREGON. At one time this flea beetle was the major pest of potato production in that area. None were found in Malheur County, and only a few specimens of WESTERN POTATO FLEA BEETLE (*E. subcrinita*) were taken. Unspecified flea beetles threatened potatoes in Gallatin, Madison, and Beaverhead Counties in MONTANA. POTATO FLEA BEETLE (*E. cucumeris*) was low and not damaging in VIRGINIA but was active on tomatoes and eggplants in CONNECTICUT. In RHODE ISLAND a new generation of potato flea beetle adults was found in low numbers on July 24. In NEW HAMPSHIRE flea beetles caused heavy damage to tomatoes in Strafford and Hillsborough Counties.

WIREWORMS were severe on potatoes at Homestead, Dade County, FLORIDA. Damage to tubers was very low in St. Johns County. Injury in UTAH was scattered with occasional damage to tubers. Wireworms infested potatoes in Lake County, MONTANA.

DARKLING BEETLES (*Blapstinus* sp. and *Metoponium* sp.) damaged young plantings throughout much of CALIFORNIA. PEPPER WEEVIL (*Anthonomus eugenii*) infested chili peppers in the southern part of the State.

CABBAGE LOOPER (*Trichoplusia ni*) damaged some tomatoes and potatoes in CALIFORNIA. Commercial tomatoes at Yuma, ARIZONA, required controls in late March, and populations were heavy in some potato fields at Queen Creek in mid-April. Cabbage looper was abundant and damaged potato foliage in the Homestead area of Dade County, FLORIDA. Controls were applied. Miscellaneous larvae, mostly cabbage looper, heavily defoliated commercial tomatoes in central INDIANA in early September. This looper damaged potatoes in WISCONSIN. Cabbage looper was heavy on tomatoes in July in VIRGINIA. Buildup was probably due to dry weather. Viruses reduced populations in early September. Very heavy populations of cabbage looper infested potatoes in RHODE ISLAND by August 19.

TOMATO FRUITWORM (*Heliothis zea*) was less severe on tomatoes in CALIFORNIA than in 1967. Controls were required on tomatoes in Yuma County, ARIZONA, from May through July. This pest damaged tomatoes in OKLAHOMA from June through August. Tomato fruitworm was light on commercial tomatoes in southwestern KANSAS in August. Larvae of this cutworm were severe on tomatoes in VIRGINIA during the second half of the summer and were the most important pests of tomatoes in commercial plantings and gardens in ALABAMA. However, damage was not so serious in Alabama as in 1966.

EUROPEAN CORN BORER (*Ostrinia nubilalis*) was very light on commercial pimento peppers in northern ALABAMA. This pyraustid was the important pest on pickling peppers in MICHIGAN. Larvae infested the crop through most of the fruiting season. Overall infestation levels were well below the past 2 years. Flights peaked June 8-9 for the first generation and August 19-24 for the second generation. Flights continued into late October because of extended mild temperatures. European corn borer destroyed 500 acres of peppers on the Eastern Shore of VIRGINIA. Populations were above normal on peppers and potatoes in MARYLAND. European corn borer was the major pest of peppers in the State in 1968. The number of European corn borer larvae infesting sweet peppers in DELAWARE in 1968 reflected the heaviest populations in corn ever recorded for the State.

BLACK CUTWORM (*Agrotis ipsilon*) in WISCONSIN damaged potatoes in early June near Spring Green, Sauk County, and some peppers in mid-June in Waushara County. VARIEGATED CUTWORM (*Peridroma saucia*) also infested potatoes near Spring Green in early June. In northeastern ILLINOIS, variegated cutworm occurred through most of the growing season, especially on tomatoes. Variegated cutworm and black cutworm were locally severe on the Eastern Shore of VIRGINIA with up to 35 percent damage to spring potatoes which were not dug until August. Black cutworm caused light damage to potato tubers by August 28 in RHODE ISLAND.

CUTWORMS were an early season problem in CALIFORNIA on tomatoes and potatoes. BEET ARMYWORM (*Spodoptera exigua*) caused local damage in a few areas of California and was medium on tomato seedlings in Clark County, NEVADA, in April. Controls were required for beet armyworm on 500 acres of tomatoes in late April and early May in Yuma County, ARIZONA. In mid-April larvae injured potato vines at Queen Creek, Maricopa County. In mid-May populations were heavy on chili peppers at Elfrida, Cochise County. A complex of beet armyworm and SOUTHERN ARMYWORM (*Prodenia eridania*) damaged tomatoes at Bradenton in Manatee County, FLORIDA. Noctuid loopers and southern armyworm damaged tomatoes in the Ft. Pierce area of St. Lucie County from August to October. Frequent rains and dense foliage made control difficult. Cutworm larvae damaged potatoes in Somerset County, MARYLAND, just before harvest. One 10-acre stand had light to heavy injury in 30 percent of the tubers.

POTATO TUBERWORM (*Phthorimaea operculella*) was generally light in potato areas of CALIFORNIA and was scarce in UTAH. Infestations in ALABAMA recurred in isolated fields in Baldwin, Mobile, and Escambia Counties. Damage was negligible due to intensified control efforts. Larvae injured less than 1 percent of the potato tubers, the lowest in several years, in the Hastings area of St. Johns County, FLORIDA. Potato tuberworm was severe in fall potatoes on the Eastern Shore of VIRGINIA. A problem is expected in untreated storage bins. Larvae occurred in some potato fields in Monroe County, MICHIGAN, for the first time in 5 years. This pest also infested potatoes in Bay County.

STALK BORER (*Papaipema nebris*) damaged tomatoes in eastern KANSAS in mid-June. Larvae damaged tomatoes in gardens in Davidson County, TENNESSEE, in early July. Stalk borer infested many potato stalks by June 27 in RHODE ISLAND.

GREEN PEACH APHID (*Myzus persicae*) was damaging all season in CALIFORNIA. Populations ranged moderate to heavy on potato vines in Maricopa County, ARIZONA, during March and April. Controls were required on tomatoes in early April in Yuma County. Green peach aphid was the most common aphid on potatoes in UTAH. Control of green peach aphid on chili peppers in the Mesilla Valley of NEW MEXICO was difficult. Green peach aphid was severe on potatoes in the Homestead area of Dade County, FLORIDA, and controls were applied. Populations of this aphid on fall potatoes were the heaviest in recent years on the Eastern Shore of VIRGINIA, but damage was light due to the late occurrence. Heavy green peach aphid populations were difficult to control on peppers and potatoes on the Eastern Shore of MARYLAND. In DELAWARE this aphid continued to be very serious on sweet peppers during July and August. Green peach aphid was a problem on potatoes in the valley area of CONNECTICUT.

POTATO APHID (Macrosiphum euphorbiae) built up heavily in untreated potato fields in RHODE ISLAND by July 10, continued heavy for about a week, and then declined rapidly. Light to moderate numbers infested potatoes and tomatoes in a southeastern MARYLAND county. This aphid was one of the most common pests in gardens in IOWA. Potato aphid caused heavy damage to potatoes in Lyon County, NEVADA, in late August, and controls were required. This aphid was very common on potatoes and some tomatoes in CALIFORNIA.

GARDEN SYMPHYLAN (Scutigerella immaculata) caused heavy damage to tomato seedlings locally in Yolo County, CALIFORNIA.

BEANS AND PEAS

Highlights:

MEXICAN BEAN BEETLE was heavy on beans in Arizona and New Mexico, was a major pest of this crop in Colorado, and was economic in areas of Nebraska. Mexican bean beetle was serious throughout Alabama, but populations in Michigan were lighter than in 1967. COWPEA CURCULIO was a major pest of table peas on the expanded commercial acreage in Alabama. Larvae of several NOCTUID MOTHS damaged beans and peas in some areas.

MEXICAN BEAN BEETLE (Epilachna varivestis) was heavy on beans in Cochise County, ARIZONA, in mid-August and in the Prescott area of Yavapai County in late August. Heavy populations damaged beans in the Farmington area of San Juan County and at Manzano in Torrance County, NEW MEXICO. Mexican bean beetle was a major pest of beans in COLORADO. Economic infestations of this beetle were scattered in Scotts Bluff, Morrill, and southern Sioux Counties, NEBRASKA. Controls were necessary in most of these fields. Mexican bean beetle larvae appeared on beans in southeastern WYOMING in mid-July. Damage was moderate in many fields in Goshen and Platte Counties, and controls were applied. Mexican bean beetle was above normal on beans in central and northern UTAH. For Mexican bean beetle in IDAHO, see CEIR 19(7):102.

Mexican bean beetle ranged light to moderate on beans over most of MICHIGAN. Populations were lower than in 1967 and lower than the 5-year average. This beetle was serious and damaging to lima and pole beans throughout ALABAMA. It was less of a problem on field peas in the State. Populations were about the same as in 1967. This beetle was generally heavy on unsprayed beans throughout MARYLAND. Controls were successful on commercial acreages. Mexican bean beetle adults infested some beanfields in RHODE ISLAND by July 2, and larvae and pupae were moderate on plants by August 19. Mexican bean beetle was moderate in NEW HAMPSHIRE in 1968.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) was widespread and very abundant in most of OREGON. Damage to pole beans was extensive in Douglas County, especially when adjacent hayfields were cut. Dusting was necessary on snap beans in Benton County. Although present in ALABAMA throughout 1968, BEAN LEAF BEETLE (Cerotoma trifurcata) was mainly a pest of peas and beans in the 2 to 6-leaf stage.

PEA WEEVIL (Bruchus pisorum) was prevalent in the peafields of the Willamette Valley, OREGON. Significant losses to processing peas occurred where control was lax. Adults appeared to be heavier than for several years in north-central IDAHO. Migrants probably entered peafields in one general movement rather than in several which is the usual occurrence. Pea weevil was generally light on peas in UTAH.

COWPEA CURCULIO (Chalcodermus aeneus) remained one of the major pests of table peas on the expanded commercial acreage in ALABAMA. Infestations in harvested peas in 1968 were less than in 1966 due to more intensified controls. Infestations were about the same as those in 1967.

BEAN LEAF SKELETONIZER (Autoplusia egena) damaged string beans in San Diego County, CALIFORNIA. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) reached damaging levels in several lentil fields in north-central IDAHO during July. Populations ranged up to 1 per square foot with as many as 4 cut lentil pods per square foot observed. CABBAGE LOOPER (Trichoplusia ni) damaged beans in WISCONSIN. Controls were required in several locations. LESSER CORNSTALK BORER (Elasmopalpus lignosellus) became a serious pest to late plantings of table peas and beans in southern ALABAMA.

BEAN APHID (Aphis fabae) was general on bush and pole beans throughout Clark and Pierce Counties, WASHINGTON, in July. Infestations were light on beans in UTAH. Bean aphid was heavy on unsprayed bean plants in RHODE ISLAND by July 16. In MARYLAND one heavy infestation was found on 4 acres of fresh market beans in Wicomico County. COWPEA APHID (A. craccivora) was widespread and heavy on cowpeas in home gardens and commercial plantings in ALABAMA. Cowpea aphid is a vector of cowpea mosaic in the State.

PEA APHID (Acyrthosiphon pisum) was generally light on peas in UTAH in 1968. Winged individuals were noted in peas in WISCONSIN by May 17. Parasites and predators prevented any rapid increase in population. Populations in midseason peas remained sufficiently high (30-50 per sweep) in some fields to warrant controls. By June 28, populations decreased due to weather, parasites, and predators. Infestations increased about September 17, when as many as 60 per sweep were noted in a few fields. Pea aphid was first noted on peas in DELAWARE in early May. Counts averaged 1-2 per sweep in most areas by late May, and controls were applied. Pea aphid populations were low in MARYLAND.

A FALSE CHINCH BUG (Nysius raphanus) was a serious pest of peas, beans, and other vegetables throughout southern ALABAMA and as far north as Bibb County.

THRIPS were generally light on peas in UTAH, but WESTERN FLOWER THRIPS (Frankliniella occidentalis) damaged beans in San Diego County, CALIFORNIA. A thrips, probably ONION THRIPS (Thrips fabaci), was very heavy on peas and beans in the Dayton area of Columbia County, WASHINGTON. The thrips problem was serious in this area throughout the 1968 season.

SEED-CORN MAGGOT (Hylemya platura) larvae injured some planted bean seeds in the spring in UTAH and infested bean seedlings a week after planting in Marion County, OREGON, in late April.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) damaged beans statewide in CALIFORNIA and caused moderate damage to some garden beans in UTAH.

GRAY GARDEN SLUG (Deroceras reticulatum) severely damaged bean seedlings in Benton County, OREGON.

COLE CROPS

Highlights:

CABBAGE LOOPER was heavy on crucifers in New Hampshire and was serious on cole crops in Maryland. Larvae were troublesome in Michigan, damaging in Tennessee and Alabama, and required controls in the Salt River Valley of Arizona. IMPORTED CABBAGEWORM was heavier than usual and very damaging to cole crops in California and was one of the most damaging pests of commercial cole crops in Alabama. DIAMONDBACK MOTH larvae were damaging in Alabama, Florida, Texas, and Arizona. ROOT MAGGOTS were of some concern in a few areas. CABBAGE APHID was serious on cabbage and collards in Alabama.

CABBAGE LOOPER (Trichoplusia ni) larvae were first collected in NEW HAMPSHIRE in early July in Cheshire County. Moderate to heavy damage began to appear on crucifers by mid-July in southern areas, with up to 90 percent of the plants damaged in some fields. Larval populations in RHODE ISLAND were low on cabbage on August 19 but were heavy on rutabagas by August 26. Moths were flying by September 3. Cabbage looper was a serious pest of cabbage, broccoli, and other cole crops during late summer and fall in MARYLAND. This looper was heavy on newly transplanted cole crops on the Eastern Shore of VIRGINIA in August. This buildup was probably due to dry weather. Viruses were effective in reducing populations in early September, and no additional increases were noted on these crops.

Cabbage looper moths were first collected in MICHIGAN in early July. A rapid buildup followed, and weekly collections of 60-80 moths were made as far northward as Newaygo and Montcalm Counties by August 26. Larvae became increasingly troublesome in all cole crop areas. Moths were collected as late as October 29. Cabbage looper damaged cabbage in WISCONSIN, and controls were required on cabbage in several locations. Larvae infested cole crops in some small areas of northeastern ILLINOIS, especially where intervals between sprays were lengthened or irrigation was inadequate.

Cabbage looper peaked in the usual high numbers on cabbage at Hastings, St. Johns County, FLORIDA, in March and April. Populations were lower than in previous years at Sanford, Seminole County. Numbers were generally low during winter and early spring in the Everglades area but became heavy on cabbage from late April through May. Cabbage looper averaged 5 per infested head on untreated cabbage in mid-May. This looper was severe on 50 acres of collards in Suwannee County, Florida, in May and delayed harvest of the crop. Cabbage looper and larvae of a NOCTUID MOTH (Pseudoplusia includens) damaged cabbage, collards, and other cole crops throughout ALABAMA. Cabbage looper was heavy on commercial cabbage plantings in Madison County, TENNESSEE, and damage was heavy on commercial and garden cabbage in northeastern and north-central OKLAHOMA during June. Cabbage looper and P. includens damaged vegetable crops in many sections of TEXAS.

Cabbage looper infestations on broccoli, cabbage, and cauliflower required controls at 3-day intervals during September in the Salt River Valley of Maricopa County, ARIZONA. Larvae infested some cole crops in UTAH and were unusually prevalent on most cole crops in CALIFORNIA. Weather kept cabbage looper populations, especially those of the second generation, low in OREGON. Controls on cauliflower and broccoli in the Willamette Valley were effective.

CUTWORMS were prevalent in CALIFORNIA early in 1968, but infestations of BEET ARMYWORM (Spodoptera exigua) were locally heavy. GRANULATE CUTWORM (Feltia subterranea) was moderately severe during mid and late spring in FLORIDA. Larvae had entered about 50 percent of the heads of untreated cabbage by mid-May in the Everglades region. Larvae did not return to the soil until just before pupation. Unspecified cutworms caused light damage to cabbage at Hastings, St. Johns County.

IMPORTED CABBAGEWORM (Pieris rapae) was more prevalent than usual in CALIFORNIA and very damaging to cole crops. Numbers in UTAH were generally high where no control was applied. Larvae were very prevalent in MONTANA. Imported cabbageworm was one of the most common pests of gardens in IOWA. The main flight in MICHIGAN occurred from early to late July. Larvae were heavy on cole crops. Adults and larvae were active throughout September and into October. In ALABAMA this pierid butterfly was one of the most damaging pests on commercial and home plantings of cabbage, collards, and other cole crops. Many larvae infested untreated cabbage in RHODE ISLAND by August 19. Infestations were moderate in cauliflower by August 27. Imported cabbageworm was lighter in NEW HAMPSHIRE in 1968 than during 1966 and 1967.

DIAMONDBACK MOTH (Plutella xylostella) was severe from early April through early June on untreated crucifers in the Everglades area of FLORIDA. After mid-May up to 60 (average 22) larvae per head infested cabbage. Damaging populations occurred in isolated areas throughout ALABAMA on all cole crops but mainly on turnips, mustard, and cabbages. Diamondback moth larvae damaged vegetable crops in many sections of TEXAS. Larvae heavily damaged cabbages in the Date Creek area of Yavapai County, ARIZONA, in late April. Although numerous in UTAH during spring, larvae did not severely damage crucifers. Diamondback moth infestations were widespread in NORTH DAKOTA, but damage was not extensive in the major mustard-growing area in the north-central district. Larvae damaged 50 percent of a field in Ransom County and a small acreage in Pierce County.

CABBAGE MAGGOT (Hylemya brassicae) heavily infested radishes by July 22 and infested rutabagas by August 19 in RHODE ISLAND. Damage by root maggots was evident in radishes, cole crops, and turnips in PENNSYLVANIA, although thousands of adult flies were killed by a fungus disease. These flies were mainly cabbage maggot and SEED-CORN MAGGOT (H. platura). ROOT MAGGOTS (Hylemya spp.) were heavy in cabbage, turnip, and radish plantings in Baltimore County, MARYLAND. Cabbage maggot was especially damaging in southeastern MICHIGAN. Some fields were so damaged that replacement fields had to be planted elsewhere. In spite of preventive controls, populations were very heavy in those fields where no crop rotation had been used. Half-grown cabbage maggot larvae were numerous in some untreated radish plantings in Dane County, WISCONSIN, by May 31. A few larvae were full grown by June 7. Damage in early radishes ranged 1-50 percent. Early in July an average of 5 larvae per plant killed up to 30 percent of the plants in scattered commercial cabbage fields in Kenosha County. Cabbage maggot was present in ILLINOIS in the spring, especially on radishes. Some resistance to certain organo-phosphates was evident.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was common in the horseradish-growing area of west-southwestern ILLINOIS. Up to 1,250 mites per leaf infested some fields. Predators were few.

CABBAGE APHID (Brevicoryne brassicae) was a serious pest of cabbages and collards in all counties of ALABAMA. Damaging numbers of TURNIP APHID (Hyadaphis pseudobrassicae) in Alabama infested turnips and mustard all summer and winter. In FLORIDA the usual high numbers of cabbage aphid were present on susceptible crops in the Hastings area of St. Johns County. Cabbage aphid, GREEN PEACH APHID (Myzus persicae), and turnip aphid populations were generally light on cabbages and other crucifers in the Everglades area. Cabbage aphid was generally high where no control was applied in UTAH. Treatments of APHIDS (Aphis spp.) in ARIZONA were made in mid-January to control colonies on broccoli, brussel sprouts, cauliflower, and turnips at Glendale, Maricopa County. Cabbage aphid and green peach aphid were very prevalent and damaging in CALIFORNIA.

YELLOW-MARGINED LEAF BEETLE (Microtheca ochroloma) was a serious pest in Mobile and Baldwin Counties and was reported as far north as Lee County, ALABAMA. STRIPED FLEA BEETLE (Phyllotreta striolata) larvae were recovered from turnip roots in western ARKANSAS in late October. In north-central NORTH DAKOTA striped flea beetle and WESTERN BLACK FLEA BEETLE (P. pusilla) ranged up to 1,250 per 100 sweeps on mustards. Severe damage was scattered but not extensive in some areas.

MOLE CRICKETS (Scapteriscus spp.) appeared in the usual high numbers in cabbage seedbeds and were damaging in the Hastings area of St. Johns County, FLORIDA.

CUCURBITS

Highlights:

STRIPED CUCUMBER BEETLE was serious on cucurbits in Delaware, heavily damaged cucumber seedlings on the Maryland Eastern Shore, and was serious on commercial cucumbers in Alabama. CABBAGE LOOPER and MELON APHID required controls on cantaloups in Arizona. Melon aphid was troublesome on the Eastern Shore of Maryland.

STRIPED CUCUMBER BEETLE (Acalymma vittatum) infested squash in RHODE ISLAND by September 30. Adults were again serious on young cucurbits during late May and early June in DELAWARE. Striped cucumber beetle caused heavy damage to cucumber seedlings on the Eastern Shore of MARYLAND before true leaves had emerged and was generally abundant on all cucurbits during the season. This leaf beetle was one of the most common pests of gardens in IOWA. Striped cucumber beetle was the most serious pest of commercial and homegrown cucumbers throughout ALABAMA, but the problem was less serious than in most years. SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) caused isolated damage to cucurbits in ALABAMA. This leaf beetle damaged commercial cucumbers in southeastern OKLAHOMA in late May. CUCUMBER BEETLES (Diabrotica spp.) damaged cucurbits in Washington and Kane Counties, UTAH, and Diabrotica sp. caused general damage in cucumber and melon-growing areas of CALIFORNIA. FLEA BEETLES (Chaetocnema spp.) on cantaloups in Yuma County, ARIZONA, required controls in late April.

CUTWORMS damaged and CABBAGE LOOPER (Trichoplusia ni) generally infested melons and cucumbers in CALIFORNIA. Cabbage looper started to build up on cantaloups in Yuma County, ARIZONA, in April, and by mid-May controls were required. Larvae of Feltia spp. were successfully controlled on cantaloups in the same area during May. Cabbage looper caused a rindworm problem in Lake County, FLORIDA, but populations were very small and injury was slight. SQUASH VINE BORER (Melittia cucurbitae) was a pest of cucumbers and cantaloups in central and southern ALABAMA. Larvae of this aegeriid moth were light on squash in RHODE ISLAND by August 28.

MELON APHID (Aphis gossypii) was prevalent on melons and squash in CALIFORNIA. Populations reached 2 peaks on cantaloups in Yuma County, ARIZONA, and controls were applied in late March and in late April. Populations of this aphid were heavy in some areas of UTAH. Melon aphid was heavy and troublesome on many cucumber, watermelon, and cantaloup plantings on the Eastern Shore of MARYLAND. Most infestations required controls.

WESTERN POTATO LEAFHOPPER (Empoasca abrupta) was prevalent and damaged cucurbits in CALIFORNIA. Empoasca spp. required controls on cantaloups from May through June to prevent the spread of disease in Yuma County, ARIZONA.

SQUASH BUG (Anasa tristis) damaged squash and other cucurbits in many areas of OKLAHOMA from mid-June until late September. Populations were heaviest in late June and mid-August. This coreid bug damaged vegetable crops in many sections of TEXAS. Squash bug was the most damaging pest of cucurbits in UTAH, especially in the southern part of the State. Populations of squash bug were unusually heavy on squash and pumpkins in CALIFORNIA.

SPIDER MITES (Tetranychus spp.) caused moderate to heavy injury to watermelons and cantaloups in MARYLAND. These pests infested cantaloups in Yuma County, ARIZONA, and required controls from early April through early July. PACIFIC SPIDER MITE (T. pacificus) damaged melons in Fresno County, CALIFORNIA, and TWO-SPOTTED SPIDER MITE (T. urticae) was locally damaging to cucurbits in the State.

GRAY GARDEN SLUG (Deroceras reticulatum) damaged cucumbers in Lane County, OREGON.

GENERAL VEGETABLES

Highlights:

CABBAGE LOOPER damaged vegetable crops in several States. BEET ARMYWORM required controls on lettuce in Arizona and was a major pest of this crop in Colorado. ASPARAGUS BEETLE was heavier than in 1967 in Delaware. GREEN PEACH APHID was a general pest of vegetables in California, damaged spinach in Oklahoma, and was heavy on celery in Florida. SLUGS damaged vegetables in some areas.

CABBAGE LOOPER (*Trichoplusia ni*) was very damaging on many vegetable crops in CALIFORNIA, primarily on lettuce. Larvae caused heavy damage to vegetable gardens in Clark County, NEVADA. Cabbage looper was the major problem on lettuce throughout ARIZONA except from June through August. Controls were difficult and had to be applied 3 times in many fields. This looper was heavy on sweetpotatoes in Maricopa County. Cabbage looper infested lettuce in the Mesilla Valley of NEW MEXICO and required controls at 3 to 7-day intervals. Cabbage looper was one of the major pests of lettuce in COLORADO and was a major pest of greens crops in ARKANSAS. Full-grown larvae were found in northern Arkansas as early as May 25. Cabbage looper usually causes problems in Arkansas during the fall months, but in 1968 some problems developed during the spring. In October light traps collected up to 3,000 cabbage looper moths per night in Cross County. Cabbage looper and CELERY LOOPER (*Anagrapha falcifera*) replaced aster yellows as the prime problem on celery in MICHIGAN. At harvest pupae presented a quality problem in celery. Control was satisfactory on young plants but became increasingly ineffective as the crop matured, mainly because spray materials could not penetrate the dense foliage. Buildup was rapid, and weekly collections of 60-80 cabbage looper and celery looper moths were made as far northward as Newaygo and Montcalm Counties, Michigan, by late August.

BEET ARMYWORM (*Spodoptera exigua*) was general on many vegetables in CALIFORNIA and caused heavy damage to vegetable gardens in May in NEVADA. Larvae first appeared on lettuce in Yuma County, ARIZONA, in early February. Treatments were made on this crop in late March, mid-April, and early October in Yuma County and in mid-May in Cochise County. This armyworm damaged onions in Maricopa County, Arizona, in early April and November. Beet armyworm was one of the major pests of lettuce in COLORADO.

Several Lepidoptera were troublesome in some areas. ARTICHOKE PLUME MOTH (*Platyptilia carduidactyla*) was severe on artichoke in all growing areas of CALIFORNIA. VARIEGATED CUTWORM (*Peridroma saucia*) caused much damage to vegetable gardens in many areas of eastern KANSAS in June. W-MARKED CUTWORM (*Spaelotis clandestina*) infested vegetables in WISCONSIN by May 31, and some treatments were made in the Wood County area. DARK-SIDED CUTWORM (*Euxoa messoria*) was more active than usual on asparagus in MICHIGAN. Larvae destroyed about 6 acres of this crop in Berrien County.

SPOTTED ASPARAGUS BEETLE (*Crioceris duodecimpunctata*) and ASPARAGUS BEETLE (*C. asparagi*) ranged from normal to below normal on asparagus in UTAH. Asparagus beetle populations were heavier than last season in DELAWARE, and injury was evident during May. SWEETPOTATO FLEA BEETLE (*Chaetocnema confinis*) was the major pest of sweetpotatoes in MARYLAND. Control programs did not prevent larval injury. Damage was as high as 30 percent in fields sampled in Wicomico County. Adults of DARKLING BEETLES (*Blapstinus* spp.) were heavy around young sweetpotato slips in Maricopa County, ARIZONA, the last half of May. Controls were applied.

GREEN PEACH APHID (*Myzus persicae*) was a general pest of vegetable crops all year in CALIFORNIA. This aphid was active on carrots, lettuce, and other vegetables from January to March and from November to December in Maricopa and Yuma Counties, ARIZONA. Green peach aphid was heavy and damaged spinach in Tulsa County, OKLAHOMA, in mid-April. Populations were very heavy on celery in the Everglades area of FLORIDA, and controls gave poor results. Green peach aphid was heavy on vegetables in RHODE ISLAND by July 10. Populations remained heavy for about 7 days and then decreased to low levels. Some aphids were infected with a fungus.

BEAN APHID (*Aphis fabae*) was heavy on rhubarb in RHODE ISLAND by June 26 and infested artichokes in Tillamook County, OREGON, during August. In CALIFORNIA, APHIDS (*Capitophorus* spp.) infested artichokes. *C. braggii* was severe on this crop in Monterey County, and *C. elaeagni* occurred in Colusa County. MELON APHID (*Aphis gossypii*) was heavy on celery in the Everglades area of FLORIDA. Controls gave poor results.

ONION MAGGOT (Hylemya antiqua) occurred in a few locally heavy infestations in CALIFORNIA. This pest caused very light damage to vegetable crops in OREGON. Current control measures are still effective against this fly. Damage to vegetables in UTAH ranged normal to light. Onion maggot was unusually active in many counties of MONTANA. Losses to vegetable crops from this fly ranged light to moderate in the Arkansas Valley area of Pueblo County, COLORADO.

SPINACH LEAF MINER (Pegomya hyoscyami) caused the normal amount of damage to table beets in UTAH. This anthomyiid fly infested beets, spinach, and chard in many backyard gardens and truck gardens in MONTANA. It was especially prevalent in the central and southeastern parts of the State. CARROT RUST FLY (Psila rosae) apparently caused no damage in OREGON in 1968 as none was reported. At one time, this fly was a serious pest in the Willamette Valley. ASPARAGUS MINER (Melanagromyza simplex) has become active on asparagus in the past 2-3 years in MICHIGAN, especially in the Oceana area. Activity has been confined to fern growth.

All stages of ONION THRIPS (Thrips tabaci) damaged onions in Grant County, WASHINGTON. Damage was unusually heavy to green onions and, in a few instances, to asparagus in CALIFORNIA. Onion thrips damage ranged from normal to light in UTAH. Onion thrips populations were moderate on onions in Maricopa County, ARIZONA, during April and early May. In Maricopa and Yuma Counties WESTERN FLOWER THRIPS (Frankliniella occidentalis) damaged lettuce in early January, February, and again in November. Unspecified THRIPS were of minor importance on onions in Dona Ana County, NEW MEXICO, during February and March, although controls were required in a few fields. Onion thrips populations were light in COLORADO. Some scarring occurred in untreated onion fields in the Arkansas Valley, but losses were light on a statewide basis.

HARLEQUIN BUG (Murgantia histrionica) was more of a problem on vegetables in 1968 than in other years in CALIFORNIA. This stink bug was one of the major pests of lettuce in COLORADO. LYGUS BUGS (Lygus spp.) were heavy on lettuce in the Casa Grande area of Pinal County, ARIZONA, in early April, and adults damaged the midribs of some lettuce at Yuma, Yuma County, in late November. LEAF-FOOTED BUG (Leptoglossus phyllopus) damaged vegetables in many sections of TEXAS. GARDEN FLEAHOPPER (Halticus bracteatus) adults and nymphs were very common on several vegetables in DELAWARE during late August and September.

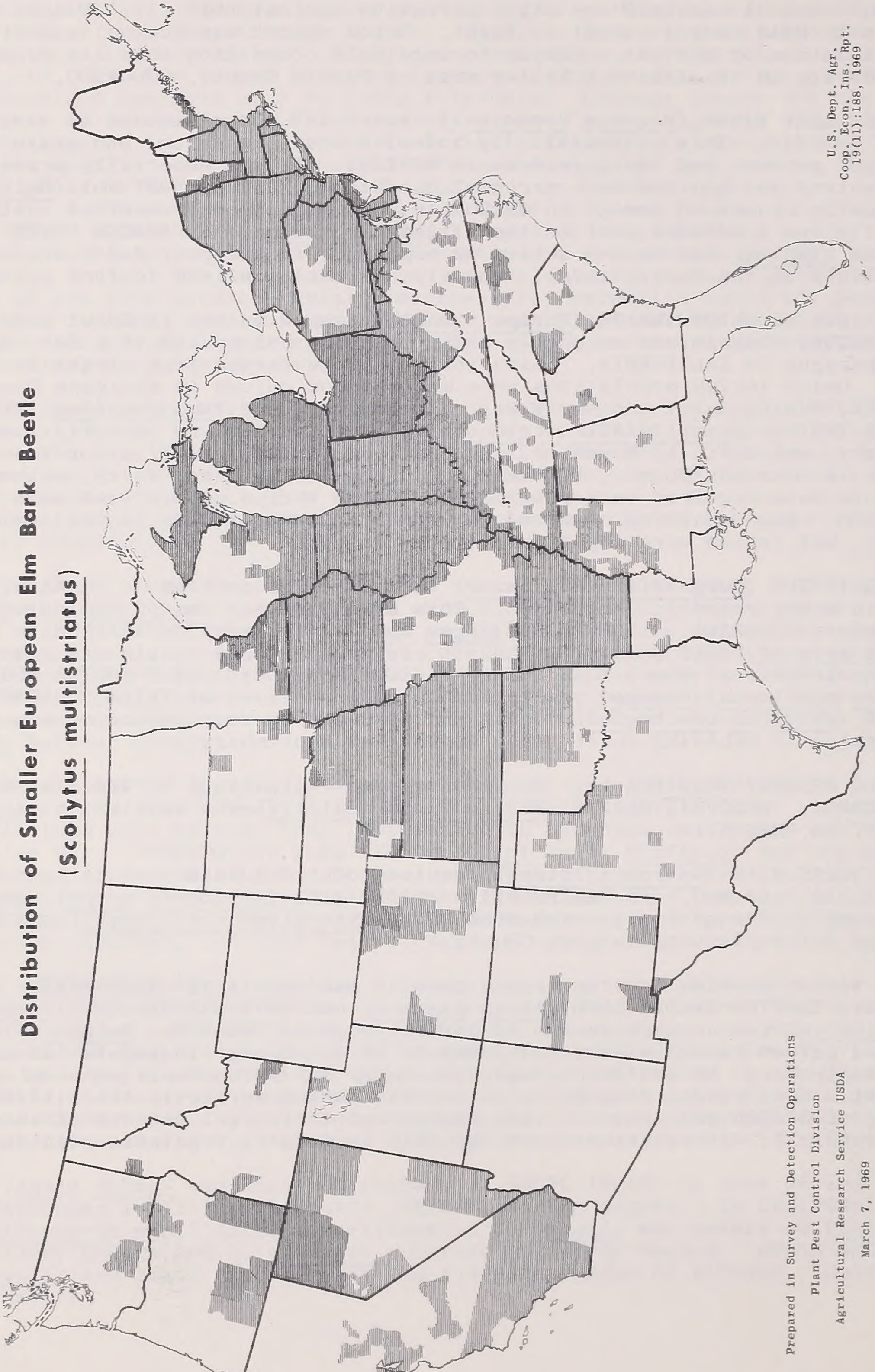
A FIELD CRICKET (Gryllus sp.) damaged vegetable plantings in Imperial County, CALIFORNIA. EUROPEAN EARWIG (Forficula auricularia) was heavier in gardens than in 1967 in VERMONT.

BROWN WHEAT MITE (Petrobia latens) required controls on onions in Lyon County, NEVADA, in late May. In CALIFORNIA a SPIDER MITE (Aplonobia myops) damaged asparagus in Orange County, and BULB MITE (Rhizoglyphus echinopus) was severe in a large onion planting in Kern County.

SLUGS were a problem for the second year in gardens in NEW HAMPSHIRE. Slugs, probably SPOTTED GARDEN SLUG (Limax maximus) and GRAY GARDEN SLUG (Deroceras reticulatum), caused much damage to garden crops in VERMONT. Deroceras spp. damaged garden crops in many instances in OHIO. Damage to vegetables continued into September. Unspecified slugs were among the most common pests of gardens in IOWA. Gray garden slug built up heavily during spring in the Willamette Valley of OREGON and again in late summer and early fall because of abnormally high rainfall. Infestations were reported in general vegetable plantings.

Distribution of Smaller European Elm Bark Beetle

(*Scolytus multistriatus*)



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